BY ORDER OF THE COMMANDER AIR FORCE GLOBAL STRIKE COMMAND

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Nuclear, Space, Missile, Command and Control

INTERCONTINENTAL BALLISTIC MISSILE (ICBM) SOFTWARE PROCEDURES

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This instruction implements Air Force Policy Directive (AFPD) 13-5, *Air Force Nuclear Enterprise*, AFI 13-530, *Intercontinental Ballistic Missile (ICBM) Nuclear Operations*, AFI91-103, *Air Force Nuclear Safety Certification Program***,** and AFI63-125, *Nuclear Certification Program*, and establishes policy and procedures for ICBM targeting software. Reference the Rapid Execution and Combat Targeting (REACT) Higher Authority Communications/Rapid Message Processing Element (HAC/RMPE) Concept of Software Support (CSS) for guidance pertaining to identifying deficiencies, sustainment of, testing and deployment of HAC/RMPE software to include Reserve Force Target List (RFTL) changes. Personnel involved in the control and deployment of ICBM software must know the requirements of this instruction and Air Force (AF) publications that pertain to their responsibilities. This instruction applies to all operational ICBM units, Twentieth Air Force (20 AF), and 576th Flight Test Squadron (FLTS) involved in ICBM targeting and software activities. This instruction applies to the Air National Guard or Air Force Reserve Command personnel assigned to AFGSC units in support of the nuclear mission. This instruction will not be supplemented without HQ AFGSC/A3IA approval. Suggestions for improving this instruction are encouraged. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition

Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**. See Attachment 1 for a glossary of references and supporting information.

Chapter 1

RESPONSIBILITIES

1.1. General. This instruction contains requirements and information necessary for the control and deployment of ICBM targeting and operational software programs. It provides a descriptive summary of requirements for deploying, controlling, sustaining and reporting deficiencies for ICBM targeting and operational software programs.

1.1.1. Users of this instruction will forward queries, waiver requests, clarification questions, and recommendations to 20 AF/A3NV with a courtesy copy to HQ AFGSC ICBM Current Operations Branch (HQ AFGSC/A3IA). Depending on the nature of the issue, 20 AF/A3NV will coordinate with HQ AFGSC/A3IA, HQ AFGSC/SE,and 625th Strategic Operations Squadron (STOS), United States Strategic Command (USSTRATCOM) Joint Functional Component Command (JFCC) Global Strike (GS) Missile Operation Branch (USSTRATCOM/J334), USSTRATCOM Missile Control Branch (USSTRATCOM/J384), USSTRATCOM Emergency Action Procedures (EAP) Guidance Branch (USSTRATCOM/J381), AFSEC/SEW, and other agencies as appropriate. To avoid duplication of effort, ICBM wings will coordinate their inputs through the other ICBM wings prior to submission to 20 AF/A3NV. Users will submit inputs in writing (e-mail is acceptable). Following evaluation and coordination, 20 AF/A3NV will respond to all users of this instruction as appropriate. If there are inconsistencies between this document and the volumes of USSTRATCOM Emergency Action Procedures (EAP-STRAT) or Emergency War Order (EWO) clarification messages, the volume or guidance messages will take precedence until the conflict is resolved.

1.2. Responsibilities.

1.2.1. USSTRATCOM/J384**.** USSTRATCOM/J384 in accordance with EAP-STRAT, Vol 16 will:

1.2.1.1. Provide copies of certified master tapes/CDs using the ICBM Code Processing System (ICPS). Provided there is no conflict with operational coding requirements, J384 will support 625 STOS/OSK requests to copy tapes/CDs containing target materials.

1.2.1.2. Participate in Nuclear Safety Cross Check Analysis (NSCCA) of program data as the Air Force Two-Person Concept (TPC) Team. If J384 code controllers are available, they will participate in NSCCA of targeting programs, certify contractor-provided copies of those tapes/CDs using the ICPS and deliver copies to the operational units.

1.2.1.3. Deliver various Minuteman (MM) targeting tapes/CDs to the operational units in conjunction with courier trips scheduled for the purpose of delivering ICBM code material.

1.2.1.4. Provide all ICBM units with the most current versions of flight and ground program tapes/CDs compatible with the operational targeting programs.

1.2.1.5. Support 625 STOS/OSK requests to produce diskettes or load Head Disk Assemblies (HDA) for targeting data validation.

1.2.1.6. Support 625 STOS/OSK requests to copy data produced on 9-track tapes onto 7-track tapes.

1.2.2. HQ AFGSC/A3IA.

1.2.2.1. AFGSC is the central point of contact for overall planning, management, and deployment of modification and improvement programs for operational ICBM weapon systems and certified software described in AFI91-103, *Air Force Nuclear Safety Design Certification* and AFI63-125, *Nuclear Certification Program.*

1.2.2.2. Serves as the single point of contact for contractor or AFMC requests for operational targeting, ground, or flight program tapes/CDs.

1.2.2.3. Provides 625 STOS/OSK with written guidance for responding to contractor or AFMC requests for targeting, ground, or flight program tapes/CDs.

1.2.2.4. Serves as HQ AFGSC focal point for sustainment hardware and software for the MM III weapon system regarding Operational Targeting Programs (OTP), Operational Flight Program (OFP), Operational Ground Program (OGP), Trajectory and Missile Parameter (TAMP) updates, Launch Facility (LF) Master Databases (DB), Execution Plan Programs (EPP) and EPP/Message Analysis (EPP/MA) Database.

1.2.3. HQ AFGSC/A3IN. Provides overall management of the ICBM Force Development Evaluation (FDE) program and establishes requirements for the update or modification of targeting databases to support test range operations.

1.2.4. HQ AFGSC/A5IR.

1.2.4.1. In conjunction with HQ AFGSC/A5IC, directs and coordinates all phases of ICBM system, subsystem, weapon, and equipment acquisition from requirement identification through initial operational capability (IOC).

1.2.4.2. Serves as HQ AFGSC focal point and HQ AFGSC OPR with ICBM SPO (AFNWC/NI) for developmental hardware and software for advanced missile systems regarding OTP, TAMP updates, LF Master DBs, and EPPs. Provides and coordinates new, modified or advance missile systems Targeting Material requests to HQ AFGSC/A3IA.

1.2.4.3. Consolidates and coordinates AFGSC ICBM Targeting Materials request to HQ AFGSC/A3IA during development phase.

1.2.5. 625 STOS/OSK.

1.2.5.1. Generates ICBM targeting and database materials to support strategic war planning, Task Force 214, the ICBM FDE test program, targeting system upgrade testing, and Reentry Vehicle (RV) fuzing data for the Service Select, Test, Assess, and Report (STAR) program.

1.2.5.2. Monitors and coordinates the design, development, acquisition, and implementation of ICBM targeting and execution system hardware and software.

1.2.5.3. Serves as the verification agency for all ICBM targeting and is the office of primary responsibility for production, control, distribution, and associated computer processing for targeting and execution plan material for the MM III weapon system, including training versions.

1.2.5.4. Produces and validates the following ICBM database tapes/CDs. The tapes/CDs are transported under TPC control to units in accordance with DODM 5200.01, Volume 3, *DoD Information Security Program: Protection of Classified Information*, AFI31-401, *Information Security Program Management*, and AFI91-104, *Nuclear Surety Tamper Control and Detection Programs* (as supplemented by AFGSC):

1.2.5.4.1. MM Operational Targeting Program (MOTP) database tape/CD

1.2.5.4.2. MM LF Master database (LFMDB) tape/CD

1.2.5.4.3. REACT EPP/MA database tape/CD

1.2.5.4.4. MM Target Case Input and Execution Plan Case Input (TCI/EPCI) tape/CD

1.2.5.5. Provides configuration management for the following databases: EPP/MA, MM LF Master, and MOTP.

1.2.5.6. Maintains a variety of computer programs and databases capable of producing a wide range of analyses such as missile force analysis, maximum and minimum booster range capabilities, targeting efficiency analysis, target achievability, and laydown configurations. These analysis programs support current and future US missile systems.

1.2.5.7. Provides analysis, software, and/or tapes/CDs upon written requests to HQ AFGSC/A3IA. Organizations requesting analysis or software/tapes/CDs must provide an info copy to 625 STOS/OSK. Requests must contain a point of contact, suspense, detailed description of parameters or forces to be analyzed and projected use or purpose of the analysis, software and/or tapes/CDs. Requesting agencies may have to provide data for the analysis if it is not readily available to 625 STOS/OSK.

1.2.5.8. Serves as Targeting Materials Control Officer (TMCO) on behalf of AFGSC/A3I by overseeing the production, distribution, and destruction of target materials.

1.2.6. Unit OSK. Responsible for all wing operational matters pertaining to target materials management. Chief, EWO Plans manages administration of the target materials program, performs duties of the target materials control officer (TMCO), coordinates EWO targeting requirements with unit staff agencies and manages and coordinates other target materials listed in this publication and AFGSCI13-5304, *Emergency War Order (EWO) Generation and Targeting – Intercontinental Ballistic Missile (ICBM) (GATI).*

1.2.7. Unit OSB. Responsible for receipt, verification, control, generation, loading, fielding, tracking and disposition of software products IAW EAP-STRAT Vol 16, and higher level guidance.

Chapter 2

SOFTWARE DEPLOYMENT

2.1. Software Deployment Process. It is imperative only properly developed, tested, and certified software is fielded in an operational ICBM unit or used in operational test launches. Operational software, certified by the Operations Control Board, must be used for operational test launches. Software certified as ready for operational testing, after completion of developmental testing shall be used for software operational tests. Software may be used for other testing purposes prior to certification after proper coordination with AFGSC/A3I, AFNWC/NIE and other applicable agencies, as necessary (i.e., AFSEC, AFNWC/NCS, AFGSC/SE, and USSTRATCOM/J384).

2.2. Nuclear Certified Software. Software or associated support software that commands, controls, targets, or retargets ICBMs is considered software requiring nuclear certification.

2.2.1. The Nuclear Certified Software Process. Nuclear critical software evaluation can be accomplished by NSCCA, or Independent Validation and Verification (IV&V). The following paragraphs outline the NSCCA process.

2.2.1.1. NSCCA. An NSCCA has the single objective of ensuring the program cannot perform in any way that could contribute to a nuclear safety violation. An NSCCA is accomplished in parallel with software development by an independent contractor to ensure critical software does not contain improper design, programming, fabrication, or application. The analysis will ensure a software application does not contribute to:

2.2.1.1.1. Unauthorized or inadvertent pre-arming, arming, launching, or releasing of a nuclear weapon or nuclear weapon system.

2.2.1.1.2. Premature or unsafe operation of a nuclear weapon system.

2.2.1.1.3. Delivery of a nuclear weapon outside the specified boundary of the planned target.

2.2.1.1.4. Unauthorized, improper, or erroneous display of status or classified information that could degrade nuclear surety.

2.2.1.1.5. Improper handling of classified cryptographic codes, invalid verification, or the retrieval of such codes by unauthorized persons in a manner that could degrade nuclear surety.

2.2.1.2. The NSCCA contractor provides a report of their crosscheck and analysis to AFNWC/NI. AFNWC/NI approves the report and includes it in a certification package. AFNWC/NI delivers the certification recommendation report to AFNWC/NCS and AFSEC/SEW. AFSEC/SEW will review the report and deem whether the software meets the stringent certification requirements for use with nuclear weapons.

2.2.1.3. Nuclear Safety Design Certification. A determination by AFSEC/SEW that is forwarded to AFNWC/NCS and AFNCW/NI that all applicable nuclear safety criteria for a given hardware or software design have been met and the design is authorized for use with nuclear weapons--also referred to as "nuclear safety certification" or "design certification" IAW AFI63-125.

2.2.1.4. AFNWC Review. AFNWC/NI and AFNWC/NCS will complete and review the NSCCA report, test and evaluation information and the AFSEC/SEW certification letter and forward this information to HQ AFGSC/A3I. If the software did not pass the certification requirements, HQ AFGSC/A3I must decide whether to continue the program and coordinate with AFNWC/NI on a corrective action plan. This plan must take into account the time and cost of another NSCCA after the software developer corrects the problem.

2.2.1.5. TPC. Once the NSCCA software bit-by-bit comparison is complete, the government will place the software under TPC control IAW AFI91-105, *Critical Components*, and AFI91-104, *Nuclear Surety Tamper Control and Detection Programs*. The software will then be transported to either 625 STOS/OSK or USSTRATCOM/J384 and kept under TPC until decertified or destroyed.

2.2.1.6. HQ AFGSC/A3I Software Certification. For operational software, HQ AFGSC/A3I will review the Software Version Document (SVD), findings from the Operational Test and Evaluation (OT&E), NSCCA report, AFNWC nuclear certification summary, to include the software being listed on the Master Nuclear Certification Listing (MNCL), AFNWC/NI review and release memorandum. If the software meets requirements, HQ AFGSC/A3I will certify the software is ready for use and notify AFNWC/NI, USSTRATCOM, AFSEC/SEW, HQ AFGSC/SEW, 20AF/A3NV, 625 STOS/OSK, affected units, and other units as applicable. A memorandum will document HQ AFGSC/A3I certification for use. If the software does not meet requirements, HQ AFGSC/A3I will notify AFNWC/NI of discrepancies. HQ AFGSC/A3I and AFNWC/NI will then agree on a plan of action to either correct the software, field it with the discrepancy or discontinue the program. Software with discrepancies will require HQ AFGSC/SEW and AFSEC/SEW approval prior to fielding, and must not affect nuclear surety/safety.

2.2.1.7. HQ AFGSC/A3I Deployment Authorization. HQ AFGSC/A3I and HQ AFGSC/SEW are the final approval authorities for deploying new, modified, or associated support software to the field which commands, controls, or retargets ICBMs. HQ AFGSC/A3I will coordinate with USSTRATCOM J384/J315, AFNWC/NI, AFSEC/SEW, HQ AFGSC/SEW, 20 AF/A3N, and 625 STOS/OSK, as applicable, and any other necessary agencies prior to fielding to ensure contractor, NSCCA certification, testing, and technical order (T.O.) changes are complete and the criteria in AFI63-125 and AFI91-103 are met.

2.3. Development Activities.

2.3.1. T.O. In-Process Reviews (IPR) and Publication Reviews. T.O. IPRs and publication reviews are periodically hosted by the contractor/subcontractor to demonstrate to the government the necessary level of fidelity is incorporated into operations and maintenance T.O.s and manuals.

2.3.2. T.O. Validation and Verification (V&V). T.O. V&V is accomplished by AFNWC/NI and 20 AF (or by units with 20 AF and AFNWC/NI oversight). AFNWC/NI and 20 AF will accomplish all T.O. checklists which are affected by the program at an operational test site(s) at either Vandenberg AFB or Hill AFB (an engineering model may be used as well) to ensure the T.O. is written correctly and achieves the desired results. Once V&V is complete, the

T.O.s are ready for use in the field; however, the system must be nuclear certified by AFNWC and authorized for duplication, distribution, and use by HQ AFGSC/A3I and 20 AF prior to deployment at an operational unit.

2.3.3. OT&E. Various kinds of OT&E are conducted during a system's life cycle to ensure the Air Force acquires and maintains operationally effective and suitable systems to meet user requirements. OT&E will be conducted in an operationally realistic environment at either Vandenberg AFB or Hill AFB. OT&E helps identify and resolve deficiencies as early as possible. Initial Operational Test and Evaluation (IOT&E) is conducted to determine the operational effectiveness and suitability of systems undergoing Research and Development (R&D) efforts.

2.4. Non-Nuclear Certified Software. ICBM software not requiring nuclear certification must be tested and released by AFNWC/NI to HQ AFGSC and approved for operational use by HQ AFGSC/A3I. All software used in the field or in support of ICBMs must be tested to ensure the software meets the user needs/requirements. All software used in the field or in support of any ICBM system/sub-system must be the same revision/version that is annotated in Automated Computer Program Identification Number System (ACPINS). Except for the NSCCA requirement and AFNWC nuclear certification, the process is nearly identical to nuclear certified software.

2.4.1. HQ AFGSC/A3I Authorization for Use. For operational software, HQ AFGSC/A3I will review the Software Version Description (SVD), the findings from Force Development Evaluation (FDE) and any information/recommendation from AFNWC/NI. If the software meets requirements, HQ AFGSC/A3I will authorize the software for use in the field and notify AFNWC/NI, USSTRATCOM, AFSEC/SEW, 20 AF/A3N, affected units, and other units, as applicable. A memorandum will document approval. If the software does not meet requirements, HQ AFGSC/A3I will notify AFNWC/NI of discrepancies. HQ AFGSC/A3I and AFNWC/NI will then agree on a plan of action to correct the software, field it with the discrepancy (if minor), or discontinue the program.

2.4.2. Software and Databases on Targeting Material Identification Letters (TMIL). 625 STOS/ OSK will provide HQ AFGSC/A3IA with a draft copy NLT 7 days prior to effective date.

2.5. ICBM Unit Software Deployment. Prior to fielding new or modified software, units must possess an authorization letter from HQ AFGSC/A3I and appropriate T.O. changes. For operations weapon systems T.O.s, a unit must have sufficient copies of the appropriate changes to ensure every combat mission ready crew has updated T.O.s prior to software deployment. The appropriate change is verified by comparing the delivered software to ACPINS. Additionally, nuclear certified software must be verified against the MNCL. Unit must verify certification status and configuration of all software prior to deployment by using the MNCL. The MNCL home page link is **https://wwwmil.nwc.kirtland.af.mil/MNCL/index.cfm** and is managed by 498 NSW.

2.5.1. If incorrect software/programs/tapes/CDs are loaded into an operational Launch Control Center (LCC) and/or LF, accomplish the following:

2.5.1.1. Load the correct version as soon as possible.

2.5.1.2. Report the incident to HQ AFGSC A3IA/A3IN as soon as possible through the AFGSC Command Center (DSN 781-0947). HQ AFGSC A3IA/A3IN will contact USSTRATCOM/J334 (DSN STE 272-5751) with operational impact and corrective actions required.

2.5.1.3. Accomplish any HQ AFGSC/A3I mandated corrective actions.

2.5.1.4. Accomplish appropriate actions in accordance with AFI91-114, *Safety Rules for the Intercontinental Ballistic Missile Systems*. Coordinate with applicable agencies and consider the following actions. For an LCC, transfer flight responsibility until investigation and corrective actions are complete. For an LF, accomplish Crew Document Annotation Procedures (CDAP) and safe the sortie as required until investigation and corrective actions are complete.

2.5.1.5. Contact HQ AFGSC/SEW to determine if reporting is required IAW AFMAN 91-221, *Weapon Safety Investigations and Reports*.

2.6. 625 STOS Software Program.

2.6.1. The following programs are used by 625 STOS/OSK to generate and validate targeting materials:

2.6.1.1. Strategic Targeting Support Software (STSS) supporting MM is hosted on 625 STOS/OSK's REACT Virtual Address extension (VAX) computer system. The STSS simulates the operations of the LCC's Weapon System Processor (WSP) for execution of the OTP and EPP. For Operational Test Launch (OTL), STSS runs a Minuteman Trajectory Simulation Program (MTSP) to produce range safety data and nominal trajectory data. STSS can also perform engineering analysis of the OTP and other WSP programs and data bases.

2.6.1.2. The MERGER program produces the LF Master DBs. The LF Master DBs are produced on Single Integrated Operational Plan (SIOP) Targeting and Application Computer System (STACS).

2.6.1.3. Quality Inspection Check Program (QUICK) verifies the data on the LF Master DB. QUICK is a nuclear-certified software program used on STACS.

2.6.1.4. EPP Database Generator (DBG) is a nuclear-certified software program. The Mission Planning Program (MPP) produces a data set on STACS used by the EPP DBG to build the annual force-wide EPP/MA operational DB.

Chapter 3

CONTROL OF OPERATIONAL TARGETING SOFTWARE

3.1. Critical Components. The programs and tapes/CDs listed in paragraph **3.1.1** through **3.1.5** are critical components. Adhere to the requirements of USAF TPC control. TPC requirements apply to USSTRATCOM, AFGSC, and all subordinate unit personnel. Nuclear certification requirements are delineated in AFMAN91-118, *Safety Design and Evaluation Criteria for Nuclear Weapon Systems* and AFI63-125, *Nuclear Certification Program*. Critical components for targeting include:

3.1.1. MOTP Executable.

3.1.2. EPP DBG.

3.1.3. EPP Executable.

3.1.4. QUICK.

3.1.5. STACS.

3.2. Non-critical Components. The programs and tapes/CDs listed in paragraph **3.2.3.1** through **3.2.3.7** are not critical components; however, they require TPC control to ensure system integrity. The following exceptions apply:

3.2.1. Contractor/AFNWC/NI Facilities. Test versions of the programs and tapes/CDs listed below that are used at contractor/AFNWC/NI facilities do not require TPC.

3.2.2. 576 FLTS: Test versions of the programs and tapes/CDs listed below that are used in the 576 FLTS Wing Codes Processing System (WCPS) require TPC handling to maintain system integrity. However, once 576 FLTS personnel transfer data to WCPS products for use in tests, TPC is not required.

3.2.3. Non-critical components for targeting, that require TPC, include:

3.2.3.1. TAMP DB. ***Note*:** SERV FDE ONLY TAMP DB does not require TPC

3.2.3.2. TCI/EPCI tapes/CDs.

3.2.3.3. LF Master DB.

3.2.3.4. EPP/MA DB. (Retain Operational and Training copies under TPC)

3.2.3.5. MM OTP.

3.2.3.6. MPP.

3.2.3.7. MERGER Program.

3.3. Operational Test Launch (OTL) Software Production.

3.3.1. 625 STOS/OSK will use the STSS to generate range safety data, nominal trajectory data, and special analysis when requested to support ICBM flight testing at Vandenberg AFB. 625 STOS/OSK is responsible for packing, shipping, and maintaining accountability of classified materials.

3.3.2. The Chief, 625 STOS/OSK will oversee generation and processing of OTL materials for FDE to ensure timely completion and shipment. He/she will designate a project officer responsible for generating and verifying all computer products necessary to meet test launch requirements. The Chief, 625 STOS/OSK will also designate a verification officer to monitor the OTL materials production and provide a quality control check in accordance with internal checklist procedures. Upon assembly of all required materials, a quality check is performed with the project officer and the verification officer to ensure all OTL targeting materials and range safety data are complete and accurate.

3.3.3. 625 STOS/OSK will send OTL data 60 days prior to the test launch date. 625 STOS/OSK must receive all required materials, to include the Aimpoint Document, MGS/Gyro Letter and the Test Execution Order, a minimum of 10 duty days prior to the required send date. If they have not received the primary and secondary MGS data before the 60-day point, they will send OTL data in multiple packages. Nominal data will be sent prior to the 60-day point, followed by the primary and secondary MGS data once it is received and processed.

3.4. Range Safety Materials. The STSS produces range safety data for OTLs. The nominal trajectory print defines missile flight by position and altitude of each missile stage and re-entry system. The MM Trajectory Simulation Program (MTSP) provides engineering state vectors for each object reentering the atmosphere with respect to downrange radars. This data facilitates selective acquisition of reentering objects.

Chapter 4

MINUTEMAN TARGETING CAPABILTIES

4.1. MM Targeting Capabilities. The MM Missile Guidance Computer (MGC) within the MGS stores four sets of target data, each target set constituting a particular mission. Each sortie requires the installation of appropriate target cases to gain initial alert status. Once target sets have valid case data loaded, each individual target set may be updated when new targeting data is addressed to any of the target sets. Additionally, each sortie has two sets of execution plan case data, which provides execution options and launch timing.

4.2. Configurations. Line two of the target case input denotes the sortie's configuration identification through the configuration data string. (See Virtual Case Book front matter for Configuration Data String Table.)

4.3. Remote Targeting Description. MM has the capability to transfer Force Direction Message (FDM) targeting data received over the Strategic Automated Command and Control System (SACCS) directly into the Weapon System Control Element (WSCE) for input, generation, and Remote Data Change (RDC).

4.3.1. MM Targeting Materials.

4.3.1.1. MOTP. Written to operate in the LCC WSP, MOTP simulates the missile's flight to generate unique launcher/target dependent constants. These constants are encoded, transmitted to the LF, and used by the flight program. MOTP uses case input data from the Bulk Storage Loader (BS/L), WSP, or manual keyboard input. For Target Case Generation (TCG), the case input provides a case number, sortie identification, target data, and other trajectory and reentry vehicle fuzing information. Additionally, MOTP uses information from the MOTP DB, TAMP DB, and LF Master DB.

4.3.1.2. MOTP DB. Contains geodetic, climatological, generic Inertial Measurement Unit (IMU) coefficients, and Minimum Case Input data. The database tape/CD is loaded into the HDA.

4.3.1.2.1. Geodetic Data. Precise launcher location and gravity data for missile trajectory computations. All geodetic data is based on DoD World Geodetic System's (WGS 84) reference ellipsoid. There are two sets of geodetic data, Missile Launch Site Data (MLSD) and Launch Region Gravity Model (LRGM).

4.3.1.2.1.1. Missile Launch Site Data. Produced by the National Geospatial-Intelligence Agency (NGA) and are refined launch site geodetics. When these geodetics are incorporated into the MLSD listing, they become the launcher geodetic source document for the MOTP DB and the LF Master DB.

4.3.1.2.1.2. Launch Region Gravity Model. Contains launch region peculiar gravity values for the MOTP. This data is produced by NGA.

4.3.1.2.2. Climatological Data. Upper air densities and winds affect the reentry vehicle's trajectory and warhead fuzing. Annual (mean) climatological data for numerous grid points over the target area are developed and compiled into the climatological data set. Climatology is produced by the Combat Climatology Center.

4.3.1.2.3. Generalized Error IMU Compensation (GENERIC) Coefficients. Used in the MOTP IMU compensation model to calculate the position and velocity corrections at Stage 3 thrust termination.

4.3.1.2.4. Minimum Case Input. Reduces the amount of data the keyboard operator must input. Minimum input recalls pre-stored data and default settings that select quantities and options normally specified in the case input.

4.3.1.3. LF Master DB. Contains specific launch site data to include gravity values, launcher geodetic latitude/longitude, and selected timer settings. The following timer values are included on the tape/CD: Single vote (set between 0 and 24 hours), Airborne Launch Control Center (ALCC) lockout (set between 0 and 24 hours), ALCC hold off (set between 11 minutes and 57.3 hours), CO-OP Enable Display and Response (set at 1 and 4 seconds, respectively), and four Cancel Launch-In-Process (CLIP) timers (disabled).

4.3.1.3.1. The database tape/CD is loaded into the HDA. The LF Master DB is also read to a Launch Facility Load Cartridge (LFLC) for subsequent upload to the MGS.

4.3.1.3.2. The actual settings of the operational and test timer values will be maintained by HQ AFGSC/A3IA and A3IT, respectively. Request any changes to those timer values in writing. Include a statement of the effect on OTLs. Coordinate with 20 AF/CC through 20 AF/A3NK, 625 STOS/ALCS, 625 STOS/OSK, A3I, A5I, AFGSC/SEW, and AFNWC/NI with an information copy sent to AFSEC and AFNWC.

4.3.1.4. TAMP DB. Contains the mass properties for all missile and reentry system configurations, as well as the WGS 84 earth reference model. The MOTP uses the TAMP region data identified on the case input for TCG.

4.3.1.5. TCI/EPCI. Contains sortie, target and timing data, and execution options for use in the MM III weapon system.

4.3.1.6. EPP. The executable program used to generate sortie-unique execution plan constant sets. When combined with the EPP DB and the squadron EPCI data, the EPP will generate execution plan constants to be remotely transferred to the sorties in preparation for Preparatory Launch Command-A (PLC-A) processing. The EPP executes strategic options.

4.3.1.7. EPP/MA DB. Contains PLC-A numbers and their corresponding attack options for two revisions. It also contains a message analysis function so that the executed option(s) can be determined from the execution characters.

Chapter 5

TARGET MATERIAL RECEIPT/VERIFICATION

5.1. Targeting Materials. Units will maintain a list of current targeting materials. HQ AFGSC/A3I will provide the TMIL which lists current EPP, TCI/EPCI tapes/CDs, MOTP, TAMP, MOTP DB, LF Master DB, and EPP/MA DB by title, identification number, tape/CD number, classification, and date produced. Guidance will identify targeting materials to be superseded or destroyed. For operational and 576 FLTS TMILs, 625 STOS/OSK will provide HQ AFGSC/A3I with a draft copy NLT 48 hours prior to effective date.

5.1.1. **(576 FLTS only)** When in receipt of contractor-provided tapes/CDs, the TMCO or ATMCO must provide a written inventory to 625 STOS/OSK and courtesy copy HQ AFGSC/A3I within 15 duty days of receipt of the tapes/CDs.

5.1.2. Only the TMCO/ATMCO will receive and/or open target materials. The TMCO will accomplish the following verification procedures upon receipt of targeting materials:

5.1.2.1. Ensure the tape/CD information on the label matches the number on the current TMIL. If discrepancies exist, notify 625 STOS/OSK immediately by telephone, DSN 271-6042. Place the questionable tape/CD in appropriate storage and do not use it until 625 STOS/OSK provides resolution.

5.1.2.2. Missile Control Target Materials Custodians (576 FLTS: TMCO/ATMCO) will verify all tapes/CDs as soon as possible after receipt and before operational use. Verification consists of the following:

5.1.2.2.1. Ensure WCPS successfully reads/loads each tape/CD. As applicable, tapes/CDs include MM LF Master DB, MM EPP, EPP DB, TCI/EPCI, MOTP, TAMP DB, MOTP DB, and MM EPP/MA DB.

5.1.3. If any tape/CD fails to verify or load during field operations, the TMCO will notify 625 STOS/OSK immediately by secure telephone and follow-up message. Place failed tape/CD in appropriate storage and don't use it for operational targeting or OTLs. 625 STOS/OSK will provide resolution on the final disposition of the tape/CD.

5.2. Titles. Units will not alter the title(s) of any WCPS generated materials, with the exception of parenthetical descriptions (for example, the WCPS generates the title "REACT MOTP TAMP"). 20 AF/A3N will verify ICBM units are using the proper materials by cross-checking the BS/L HDA ID data sheet with the build sheet.

5.3. Distribution.

5.3.1. Targeting materials are distributed in sealed packages through administrative service channels. The method of distribution (special aircraft, courier, or mail) is dependent on the nature of the material, classification, and its effective date.

5.3.2. Unit OSB and 576 FLTS/TEX will control, store, and document destruction of all issued tapes/CDs.

5.4. Destruction of Target Materials:

5.4.1. The HQ AFGSC/A3I TMIL authorizes destruction of targeting materials. The TMCO notifies OSB personnel of materials identified for destruction. Units will not destroy targeting materials until they receive a TMIL authorizing destruction. All destruction requests should be sent to HQ AFGSC/A3IA with an info copy to 625 STOS/OSK.

5.4.2. Destroy targeting data on magnetic tapes by either degaussing or burning. Degaussing is the preferred means of destroying magnetic target materials. Destroy targeting data on optical media (CDs) in accordance with DoD Manual 5200.01, Volume 3, *DoD Information Security Program: Protection of Classified Information*, and the evaluated products list (EPL) produced by NSA. Only National Security Agency (NSA)-approved degaussers may be used.

5.4.3. Units may reuse or dispose of degaussed magnetic tapes. Notify the unit TMCO by letter when destruction actions are complete. The unit TMCO will notify 625 STOS/OSK within 15 duty days by letter when destruction is complete.

5.4.4. 30 SW/SEY and 576 FLTS/TEX only: OTL Range Safety, Nominal Trajectory, and target case printouts as well as compact discs will be destroyed no later than six months after the applicable test launch unless notified by 625 STOS/OSK to retain this data for longer periods. These materials may be retained for engineering purposes. When no longer needed, destroy in accordance with DoD Manual 5200.01, Volume 3, *DoD Information Security Program: Protection of Classified Information* and AFI31-401, *Information Security Program Management.*

JAMES S. BROWNE, Brigadier General, USAF
Director of Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFGSCI 13-5304, (S) *Emergency War Order (EWO) Generation and Targeting – Intercontinental Ballistic Missile (ICBM) (GATI),* 1 October 2012

AFI 31-401, *Information Security Program Management*, 1 November 2005

AFI 63-125, *Nuclear Certification Program*, 15 March 2004

AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, 17 November 2010

AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, 10 September 2010

AFI 91-105, *Critical Components*, 7 January 2011

AFI 91-114, *Safety Rules for the Intercontinental Ballistic Missile System*, 25 October 2011

AFMAN 33-363, *Management of Records,* 1 March 2008

AFMAN 91-118, *Safety Design and Evaluation Criteria for Nuclear Weapon Systems*, 4 August 2010

AFMAN 91-221, *Weapons Safety Investigations Reports*, 8 Nov 2010, Incorporating Change 1, 20 October 2011

AFPD 13-5, *Air Force Nuclear Enterprise*, 6 July 2011

EAP-STRAT, Vol 16, *ICBM Code Component Control Policy and Proceedures*, 1 April 2013

DoDM 5200.01, Volume 3, *DoD Information Security Program: Protection of Classified Information*, 21 March 2012

Prescribed Forms

This publication does not prescribe any forms.

Adopted Forms

AF Form 847, *Recommendation of Change of Publication*

Abbreviations and Acronyms

ACPINS—Automated Computer Program Identification Number System

AF—Air Force

AFGSC—Air Force Global Strike Command

AFGSC/A3IA—HQ AFGSC/ICBM Current Operations Branch

AFGSC/SEW—HQ AFGSC/Weapons Safety Division

AFSEC—Air Force Safety Center

ALCS—Airborne Launch Control System

ATMCO—Alternate Target Material Control Officer

BS/L—Bulk Storage/Loader

CMCC—Computer Memory Confidence Check

DB—Database

DGZ—Designated Ground Zero

DoD—Department of Defense

EPCI—Execution Plan Case Input

EPP—Execution Plan Program

EPPDBG—Execution Plan Program Data Base Generator

EPP/MA—Execution Plan Program/Message Analysis

EWO—Emergency War Order

FDE—Force Development Evaluation

FDM—Force Direction Message

FLTS—Flight Test Squadron

GENERIC—Generalized Error IMU Compensation

HDA—Head Disk Assembly

HQ—Headquarters

IAW—In Accordance With

ICBM—Intercontinental Ballistic Missile

ICPS—ICBM Code Processing System

IMU—Inertial Measurement Unit

IOC—Initial Operational Capability

LCC—Launch Control Center

LF—Launch Facility

LFLC—Launch Facility Load Cartridge

LFMD—Launch Facility Master Database

LRGM—Launch Region Gravity Model

MCC—Missile Combat Crew

MGC—Missile Guidance Computer

MGS—Missile Guidance Set

MLP—Master Lesson Plan

MLSD—Missile Launch Site Data

MM—Minuteman

MOTP—MM Operational Targeting Program

MPP—Mission Planning Program

MSP—Missile Simulation Program

MTSP—MM Trajectory Simulation Program

NGA—National Geospatial-Intelligence Agency

NSA—National Security Agency

NSCCA—Nuclear Safety Cross-Check Analysis

OTL—Operational Test Launch

OTP—Operational Targeting Program

OSB—Wing Codes Flight

PRP—Personnel Reliability Program

QUICK—Quality Inspection Check Program

RDC—Remote Data Change

REACT—Rapid Execution and Combat Targeting

SACCS—Strategic Automated Command and Control System

STACS—SIOP Targeting and Application Computer System

STSS—Strategic Targeting Support Software

STOS/ALCS—Strategic Operations Squadron Airborne Launch Control System Branch

STOS/OSK—Strategic Operations Squadron Ballistic Missile Trajectory Branch

TAMP—Trajectory and Missile Parameter

TCG—Target Constants Generation

TCI—Target Case Input

TMC—Target Materials Custodian

TMCO—Target Material Control Officer

TPC—Two Person Concept/Two Person Control

VAX—Virtual Address eXtension

WCPS—Wing Code Processing System

WGS—World Geodetic System

WSCE—Weapon System Control Element

WSP—Weapon System Processor